ALIVE HUMAN DETECTION USING PIR SENSORS

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ABSTRACT

This project is to find out the human being survival in War field and during natural disaster like earthquake. The project consists of a robot with an IR based human radiation sensor, which picks up signals from human radiations and gives a signal output. Whenever any human being comes in the vicinity of the system the IR system gives a signal. The movement of the robot can be controlled through an RF transmitter. The Robot can be controlled through mobile withWiFi.

Keywords— IOT(Internet Of Things), Sensors, microcontroller.

I. INTRODUCTION

This Project deals with live personal detection robot based on Microcontroller. Here we are using PIR sensor to detect the human. The project is mainly used in the debris for Earthquake rescue and in the radiation prone areas.Internally it consists of IR sensors. The infrared sensors are used to sense the live persons. All the above systems are controlled by the Microcontroller.The Microcontroller is used to control the motors. It gets signals from the PIR sensors and it drives the motors according to the sensor inputs. Two DC gear motors are used to drive the robot.By this project it will be
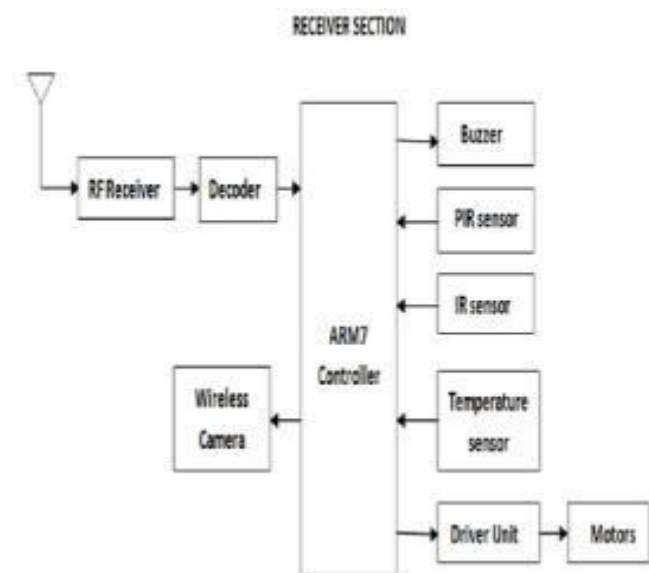
II. BLOCK DIAGRAM

Figure 1:Block diagram of proposed system

a great help indeed to rescuers in detection of the more & more alive human beings at the disaster sites at proper time. This is also user friendly, economical, semi-autonomous and efficient device by software programming interfacing for detection.

III. WORKING

The robot uses two levels of sensing in order to achieve higher cost-effectiveness in the detecting process in terms of the actual cost of equipment, the processing cost, the communication cost, the storage cost, and the power cost. The first level is a PIR sensor used with a temperature sensor, that is used as the primary sensor in order to detect the existence of living humans in a scene.The second level is a human body shape sensor. This level uses low-cost web camera in order to confirm the existence of a human body.The robot is assumed to be equipped with a simple temperature sensor in order to detect fire in Rescue scenario and a wireless communication link in order to communicate with the rescue team whenever a need arises.
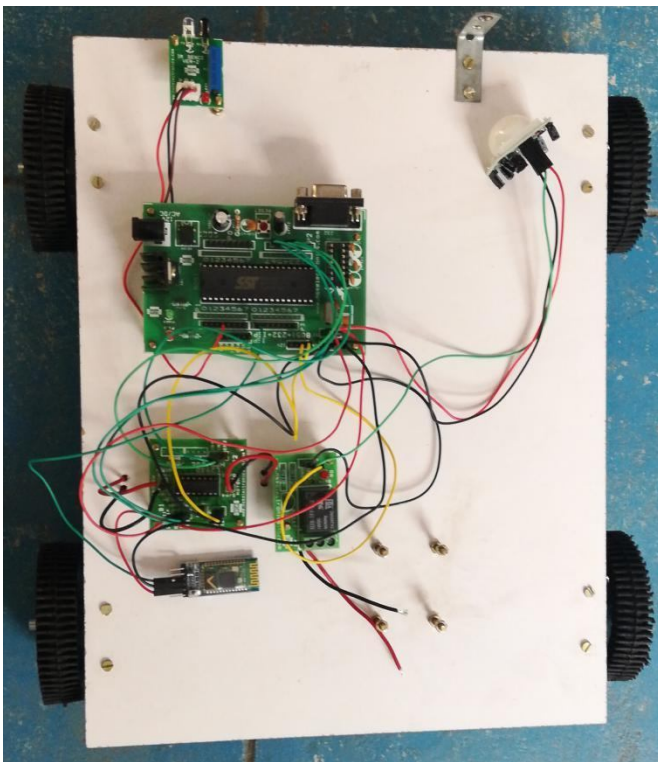

Fig.2 Complete Model

IV. HARDWARE REQUIREMENTS

➢ MICROCONTROLLER

Low-power, high-performance CMOS 8-bit microcontroller with 4KB of ISP flash memory. The device uses Microchip high-density, nonvolatile memory technology and is compatible with the industry-standard 80C51 instruction set and pinout. On-chip flash allows program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer
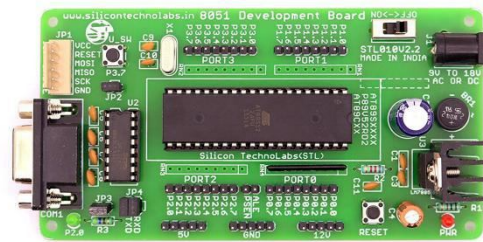

Fig.3 Microcontroller

➢ TRANSMITTER AND RECEIVER

The IR transmitters are connected to supply, so that they will transmit high signal all the time. The IR receivers are connected to the comparator circuit, to get digital signals. A low power operational amplifier LM324 IC has been used to develop a comparator circuit.
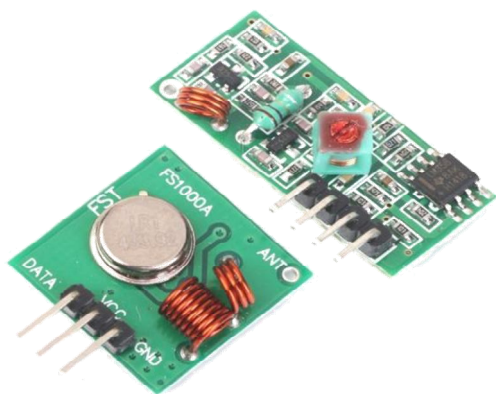
Fig.4 Transmitter and receiver.

➢ PIR SENSOR

A Passive Infrared sensor (PIR sensor) is an electronic device that measures infrared (IR) light radiating from objects in its field of view. PIR sensors are often used in the construction of PIR-based motion detectors. Apparent motion is detected when an infrared source with one temperature, such as a human, passes in front of an infrared source with another temperature.

Fig.5 PIR sensor

➢ DC MOTOR

A motor is an electrical machine which converts electrical energy into mechanical energy. The peinciple of working of a DC motor is that " Whenever a current carying conductor is placed in a magnetic field, it experiences a mechanical force".
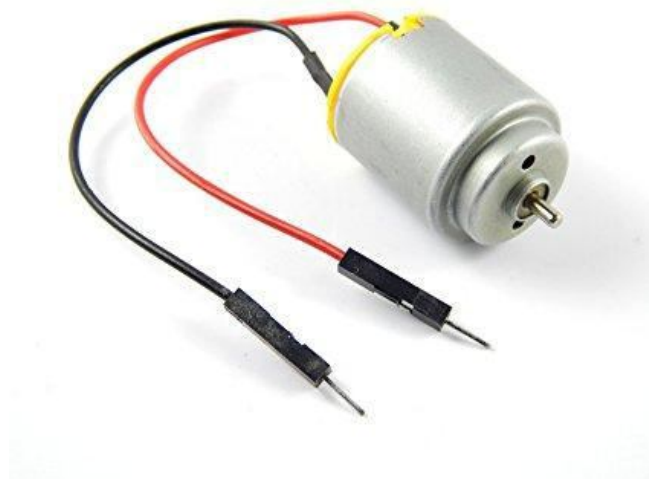

Fig.6 DC Motor

➢ SMARTPHONE

The robot is controlled by the smartphone through an app connected via bluetooth that receives live video relay from the other smartphone that is placed on the robot.

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Fig.7 Smartphone

➤ POWER SOURCE

An AC to DC adaptor as been used to get DC input for the mother board. In mother board, we have developed a 5V regulator circuit, which is needed for microcontroller as supply voltage. IR transmitters are also connected to 5V supply, so that they always transmit high signal. LM7805 is used for 5V regulated supply.
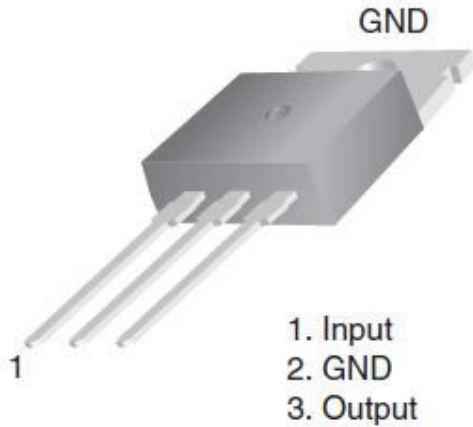

Fig.8 Power source

➤ IR SENSOR

The IR Proximity Sensor is a multipurpose infrared sensor which can be used for obstacle sensing, color detection, fire detection, line sensing etc and also as an encoder sensor.

Fig.9 IR Sensor

V. SOFTWARE SPECIFICATIONS

• ANDROID STUDIO

Android studio is the authority coordinated advancement environment(IDE) for Google's Android working framework. It is based on JetBrains' IntelliJ IDEA programming and composed particularly for Android development.

Fig.9 Android Studio

• KEIL IDE

The Keil C51 C Compiler for the 8051 microcontroller is the most surely understood 8051 C compiler on the planet. The C51 Compiler empowers you to form 8051 microcontroller applications in C that, once accumulated, have the capability and speed of low level registering develop. Vernacular developments in the C51 Compiler give you full access to all assets of 8051.

VI.ADVANTAGES

• Reliable, Economical, Efficient.

• Low cost.

• Easy installation.

• Friendly and Semi-Autonomous.

VII. CONCLUSION

By this project it will be a great help indeed to rescuers in detection of the human beings at the disaster sites.This is also user friendly, economical, semi-autonomous and efficient device by software programming interfacing for detection.This proposed model system will be a combination of a stationary and a mobile robot system especially for the disaster affected chaotic areas.

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